

CLAIMS :

1. An injection syringe comprising a barrel 1 and a rod 2 located inside said barrel with the possibility of lengthwise travel, a needle 7 which is circumferentially covered by a thin-walled protective sheath 25, and a cylinder piston 3 in the form of a cap with compressive cylindrical ledges 18 on its outside surface, the diameter of which slightly exceeds internal diameter of chamber 19 of said barrel 1 and with a front cone 20,
characterized in that the syringe further comprises,
 - a partition 6, which is stationary inside the barrel 1, and windows 10 on each side of said partition 6, whereby the syringe needle is firmly fixed in the central part and space is provided inside said barrel for transitional movement,
 - a barrel shaped actuator 4 having legs 22 and an axial channel 23 providing means for passage of said injection needle 7 and concentric to said channel, a cylindrical jack/socket 24 for installation of a thin-walled protective sheath 25 circumferential to said injection needle 7, the actuator further comprising oppositely located V-shaped ledges 26 fixed outside at the end of said legs 22 and in the middle - oppositely arranged forward directional V-shaped supports 27 with upper 28 and lower sites 29 bearing said partition 6 in the front and back positions of said protective sheath 25, whereby the actuator and the sheath gains limited transitional movement freedom on the axis of the barrel relative to both the barrel and to the needle remaining fixed on said partition 6,
 - a diaphragm 5, located between said actuator 4 and said cylinder piston 3, being in the form of a bushing with cylindrical compressor ledges 30 at their outside surface, the size of which slightly exceeds the diameter of chamber 19, and inside it a stepped cavity 31, conforming to the form/shape and sizes of leg ends 22 whereby the legs ends 22 of the actuator can be firmly fixed into said diaphragm and disconnection of the legs is avoided during intake stage of liquid in the syringe, and whereby the front cone 20 pushes the actuator towards the distal end of the needle when the rod is inserted completely in the barrel so that the sheath, which is accompanied by the actuator, advances towards the distal end of the needle covering its tip in full to avoid the user stick the needle tip onto any unwanted surface upon extraction of the distal end from under the skin, while said protective sheath is additionally locked in its covering position thereby guaranteeing single use of the syringe in result of the engagement of the partition on the lower bearing surfaces 29.

2. An injection syringe as set forth in claim 2 wherein the syringe comprises additional means of protection from re-use of the syringe in the form of a ring-type ledge 13 engaging on V-shaped detents 17 provided on fins 14 of the rod 2.

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3. An injection syringe as set forth in claim 1 or 2, wherein said protective sheath 25 is installed without clearance on a syringe needle 7 and fixed on actuator 4 located in the barrel above the partition with the ability of lengthwise travel allowing to inject a needle with said sheath hypodermically /under the skin or intramuscular to the patient painlessly with a possibility of additional extension of tissue by said sheath, that in turn, allow to speed up the process of a absorption of injected medications.

4. An injection syringe as set forth in one of the preceding claims, wherein the external diameter of the clamp 16 is especially arranged to fit and fully inserted in the cylindrical turnery 12 without clearance so that the user is eliminated to pull the inserted rod 2 out of said barrel 1 upon completion of the single use the syringe.

5. An injection syringe as set forth in one of the preceding claims, wherein said partition 6 is provided with a rectangular cross-section having substantially straight sides so that the actuator 4 is locked on the partition in the rod's 2 fully inserted position to disable the rod's rearward movement.

6. An injection syringe as set forth in one of the preceding claims, wherein the cylinder piston 3 and the diaphragm 5 are made of modified rubber material.

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7. An injection syringe as set forth in one of the preceding claims, wherein the protective sheath 25 is made of transparent material.

SYRINGE

The present invention relates to single-use injection syringes having means of protection from re-use and more importantly from traumatizing by a needle after injection.

- 5 Application of said medical syringe allows eliminating its reuse, guaranteeing prevention from traumatizing by the distal end of the needle after injection and excluding the possibility of carry incurable or difficult to cure infection diseases. A protective sheath covering the needle of the syringe is automatically advanced to cover the distal end of said needle upon completion of its single use. A thin-walled protective sheath is further
- 10 installed circumferentially onto the syringe needle without clearance and fixed on an actuator located in the barrel above a partition having freedom of lengthwise travel allowing to inject a needle with said sheath hypodermically/under the skin or intramuscular to a patient painlessly with the possibility of additional extension of tissue by said sheath, which in turn, allow to speed up the process of a absorption of injected
- 15 medications.